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SPECIFICATION FOR
BOX, ALUMINIUM, RECTANGULAR

(First Reprint MARCH 1983)

UDC 685·51 [669·71]

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MANAK BHAVAN 9 BAHADUR SHAH ZAFAR MARG
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Gr 3 *November* 1975

Indian Standard

SPECIFICATION FOR BOX, ALUMINIUM, RECTANGULAR

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(Continued from page 1)

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Indian Standard

SPECIFICATION FOR BOX, ALUMINIUM, RECTANGULAR

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Instiution on 22 September 1975, after the draft finalized by the Domestic Hardware Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

0.2 While laying down this standard due weightage has been given to the proper type of materials to be used and prevalent trade practices being followed by the manufacturers in this field. Though the users are free to have the sizes and dimensions of their choice, the more popular sizes have been given for their guidance.

0.3 This standard contains clauses which call for agreement between the purchaser and the supplier. These clauses are **3.1.1**, **4.5**, **5.4**, **7.1** and **9.1**.

0.4 This standard is one of a series of Indian Standards on domestic hardware. Other standards published so far in the series appear on page 10.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard lays down requirements for rectangular aluminium box for general use.

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*Rules for rounding off numerical values (*revised*).

2. MATERIALS

2.1 The various components of the aluminium box shall be made from the following materials:

Component(s)	*Material*	*Conforming to* (*See* Note)
Body and lid	Aluminium or aluminium alloy sheet of thickness prescribed in Table 1	Designation 19500 (S1B), 19000 (S1C), 31000 (NS3), 52000 (NS4), 64430 (HS30) or 65032 (HS20) of IS : 737-1974*
Hinges	Aluminium or aluminium alloy sheet of thickness minimum 0·90 mm for box sizes up to 355 mm and minimum 1·60 mm for larger box sizes	Designation 19000 (S1C) or 31000 (NS3) of IS : 737-1974*
Hinge pins	Galvanized mild steel wire	IS : 280-1962†
	or	
	Aluminium or aluminium alloy wire having diameter minimum 1·25 mm for box sizes up to 255 mm and minimum 1·60 mm for larger box sizes	Designation 19000 (G1C) or 53000 (NG5) of IS : 739-1966‡
Hasps and staples	Aluminium or aluminium alloy sheet of thickness minimum 0·90 mm for box sizes up to 355 mm and minimum 1·60 mm for larger box sizes	Designation 19000 (S1C) or 31000 (NS3) of IS : 737-1974*
	or	
	Cast aluminium alloy (only for staple)	IS : 617-1959§

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*Specification for wrought aluminium and aluminium alloys, sheet and strip for general engineering purposes (*second revision*).

†Specification for mild steel wire for general engineering purposes (*second revision*).

‡Specification for wrought aluminium and aluminium alloys, wire (for general engineering purposes) (*revised*).

§Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*revised*).

Component (s)	*Material*	*Conforming to* (*See* Note)
Wire for hasps and staples	Aluminium or aluminium alloy wire of diameter minimum 2·80 mm for box sizes up to 175 mm, minimum 3·55 mm for box sizes 200 mm to 355 mm and minimum 4·50 mm for larger box sizes	Designation 19000 (G1C) or 53000 (NG5) of IS : 739-1966[*]
Rivets	Aluminium or aluminium alloy wire	Designation 19000 (R1C) or 53000 (NR5) of IS : 740-1966[†]
Handle	Aluminium or aluminium alloy wire of diameter minimum 5·00 mm or Cast aluminium alloy	Designation 19000 (G1C) or 53000 (NG5) of IS : 739-1966[*] IS : 617-1959[‡]

NOTE — The designations of aluminium and aluminium alloys given in this column are in accordance with IS : 6051-1970[§]. However, the relevent old Indian Standard designations have been given in parentheses for ready reference.

3. SIZES AND SHEET THICKNESSES

3.1 The nominal sizes of the aluminium box and the thickness of the aluminium sheet used for a particular size shall be according to Table 1.

3.1.1 The aluminium boxes may have sizes and sheet thicknesses other than those given in Table 1 subject to the agreement between the purchaser and the supplier.

4. MANUFACTURE

4.1 The pressed aluminium boxes shall have a minimum length to width ratio of one. The depth of the drawn body (without lid) shall be minimum 10 percent of the width of the box in the case of shallow boxes, 40 percent of the width for general run of boxes and maximum 200 percent of the width in the case of deep boxes.

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[*] Specification for wrought aluminium and aluminium alloys, wire (for general engineering purposes) (*revised*).

[†] Specification for wrought aluminium and aluminium alloys, rivet stock (for general engineering purposes) (*revised*).

[‡] Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*revised*).

[§] Code for designation of aluminium and its alloys.

TABLE 1 NOMINAL SIZE AND SHEET THICKNESS OF ALUMINIUM BOX

(*Clauses* 2.1, 3.1 *and* 3.1.1)

All dimensions in millimetres.

NOMINAL SIZE (LENGTH)	SHEET THICKNESS			
	Aluminium and Non-Heat-Treatable Aluminium Alloys			Heat-Treatable Aluminium Alloys of Designations 64430 and 65032 of IS : 737-1974*
	Designation 19500 of IS : 737-1974*	Designations 19000 and 31000 of IS : 737-1974*	Designation 52000 of IS : 737-1974*	
(1)	(2)	(3)	(4)	(5)
175 (7″)	0·90	0·90	0·71	—
200 (8″)	0·90	0·90	0·71	—
228 (9″)	0·90	0·90	0·71	—
255 (10″)	0·90	0·90	0·71	—
310 (12″)	—	1·25	0·90	0·90
332 (13″)	—	1·25	0·90	0·90
355 (14″)	—	1·25	0·90	0·90
406 (16″)	—	1·25	0·90	0·90
457 (18″)	—	1·25	0·90	0·90
505 (20″)	—	1·25	0·90	0·90
555 (22″)	—	1·60	1·25	1·25
610 (24″)	—	1·60	1·25	1·25

NOTE — Since the sizes of the aluminium box are still popularly known in the industry in inches, the inch equivalents for the sizes have also been given in parentheses in col 1 for convenience of the manufacturers and the users.

*Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes (*second revision*).

4.2 The maximum permissible reduction in thickness in the pressed aluminium boxes shall not exceed 10 percent of the sheet thickness when measured at the thinnest location.

4.3 The handle with its lugs and attachments shall be securely attached and it shall be centrally located on the front side of the box. In the case of boxes of size smaller than 174 mm, handle need not be provided. The wire handle in the case of boxes of size up to 225 mm shall be secured in appropriate perforated tabs formed in the parent sheet. In larger sizes the handle shall be secured by means of lugs riveted to the parent sheet.

AMENDMENT NO. 1 APRIL 1981

TO

IS:7813-1975 SPECIFICATION FOR BOX, ALUMINIUM, RECTANGULAR

Alterations

(*Page 7, clause 5.4*) - Substitute the following for the existing clause:

'5.4 The box may be anodized if agreed to between the purchaser and the supplier. The anodizing shall confor to Grade AC 10 of IS:1868-1968*.'

(*Page 7, clause 6.2, last sentence*) - Substitute the following for the existing sentence:

'The joints shall not be opened after the test.'

(CPDC 17)

4.4 The smaller boxes (of sizes up to 174 mm) shall be provided with a suitable arrangement, such as nib and bead, or nib and slot, for catching the lid on the body. The boxes of size 175 mm to 400 mm shall be provided with one set of hasp and staple at the centre of the front side of box. The boxes of size larger than 400 mm shall be provided with two sets of hasps and staples, one set located near each end of the front side. The hasps may be of sheet construction only or the combination of sheet and wire.

4.5 The boxes of size smaller than 355 mm shall be made by pressing whereas the larger sizes may be made as agreed to between the purchaser and the supplier. The boxes of size larger than 310 mm shall be provided with a formed button (round depression) on the bottom at each corner to avoid contact with ground. The lid and the bottom of larger boxes may be of ribbed construction so as to provide additional strength.

5. WORKMANSHIP AND FINISH

5.1 The aluminium box shall be finished smooth and shall be free from sharp edges, burrs, dents, puckers, scratches, deep tool marks and other surface defects. It shall be sufficiently strong and rigid so as not to buckle or yield under normal usage.

5.2 The hinges, handles, hasps and staples shall be neatly formed and fitted to the box in a good workman like manner. The tabs, nibs, slots, beads and buttons formed shall be of regular shape and placed symetrically in required locations.

5.3 The outer surface of the box shall be finished bright by buff polishing and the inside surface shall be frosted by caustic dip.

5.4 The box may be anodized according to Grade AC10 of IS : 1868-1968* if agreed to between the purchaser and the supplier.

6. TESTS

6.1 Test for Handle — The box shall be filled with a load equivalent to 0·6 kg per cubic decimetre of inside volume (including body and lid). The handle shall withstand this load for 1 hour without any distortion.

6.2 Test for Soundness of Joints — The box shall be dropped from a height of 150 cm, once on the largest flat surface, once on the longest edge and once on any corner. The box shall not get damaged.

6.3 Test for Anodizing — The anodized aluminium box shall satisfy the relevant tests given in IS : 5523-1969†.

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*Specification for anodic coatings on aluminium (*first revision*).

†Methods of testing anodic coatings on aluminium.

7. SAMPLING

7.1 Sampling procedure and acceptance criteria for the aluminium boxes shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.

8. MARKING

8.1 Each box shall be legibly stamped on the bottom with the manufacturer's name, initials or recognized trade-mark and its size.

8.1.1 Each box may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

9. PACKING

9.1 Packing shall be done as agreed to between the purchaser and the supplier.

APPENDIX A

(*Clause* 7.1)

SAMPLING PROCEDURE AND CRITERIA FOR CONFORMITY FOR ALUMINIUM BOXES

A-1. SAMPLING

A-1.1 Lot — In any consignment all the boxes of the same size manufactured from the same material under essentially similar conditions of manufacture shall be grouped together to constitute a lot.

A-1.1.1 For ascertaining the conformity of a lot to the requirements of this standard, the samples of the boxes shall be selected and tested separalely for each lot.

A-1.2 The number of boxes to be selected at random from a lot shall depend upon the size of the lot, and shall be in accordance with col 1 and 2 of Table 2.

TABLE 2 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

(*Clauses* A-1.2, A-1.3.1 *and* A-1.3.2)

LOT SIZE (NO. OF BOXES IN THE LOT)	FOR DIMENSIONS, MATERIALS AND WORKMANSHIP		FOR HANDLE TEST, SOUNDNESS OF JOINTS TEST AND ANODIZING TEST	
	Sample Size	Permissible No. of Defectives	Sub-sample Size	Permissible Number of Defectives
(1)	(2)	(3)	(4)	(5)
Up to 100	8	0	3	0
101 to 150	13	1	3	0
151 „ 300	20	2	5	0
301 „ 500	32	3	8	0
501 „ 1 000	50	5	13	1
1 001 „ 3 000	80	7	20	2
3 001 to 10 000	125	10	32	3

A-1.2.1 The boxes in the sample shall be selected at random from the lot and in order to ensure the randomness of selection, procedures laid down in IS:4905-1968* may be followed.

A-1.3 Number of Tests and Criteria for Conformity

A-1.3.1 *For Dimensions, Materials and Workmanship* — The boxes selected according to **A-1.2** and **A-1.2.1** shall be inspected for dimensions, materials and workmanship. The lot shall be considered as conforming to these requirements if the number of boxes failing in any one or more of the requirements does not exceed the permissible number of defective boxes given in col 3 of Table 2.

A-1.3.2 *For Handle Test, Soundness of Joints Test and Anodizing Test* — The lot having found conforming under **A-1.3.1** shall be inspected for handle test, soundness of joints test, and anodizing test (for anodized aluminium boxes only). For this purpose a number of boxes in accordance with col 4 of Table 2 shall be selected at random from those inspected and found conforming under **A-1.3.1** and subjected to these tests. The lot shall be considered as conforming to the requirements of these tests if the number of boxes failing in any one or more of these tests does not exceed the permissible number given in col 5 of Table 2.

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*Methods for random sampling.

INDIAN STANDARDS ON DOMESTIC HARDWARE

IS:

275-1961	Padlocks (*second revision*)
726-1964	Galvanized steel buckets for general use (*revised*)
1018-1961	' M ' type brass padlocks (*revised*)
3981-1967	*SIGRIES*
4065-1967	Watering cans
4109-1967	*KADAHIES*
4119-1967	Charcoal-burning pressing irons
4120-1967	Tubs and baths
4230-1967	Lock, lever tumbler type
4231-1967	Locks, Miller type
6799-1972	Locks, bicycle
6808-1972	Grinder, hand, domestic
6880-1972	Machine, *SEWIAN* (Vermicelli)
7211-1973	Mincer, hand operated, clamp type
7257-1973	Trunks, steel, domestic
7763-1975	Extractor, juice, domestic

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N=1 kg.m/s^2
Energy	joule	J	1 J=1 N.m
Power	watt	W	1 W=1 J/s
Flux	weber	Wb	1 Wb=1 V.s
Flux density	tesla	T	1 T=1 Wb/m^2
Frequency	hertz	Hz	1 Hz=1 c/s (s^{-1})
Electric conductance	siemens	S	1 S=1 A/V
Electromotive force	volt	V	1 V=1 W/A
Pressure, stress	Pascal	Pa	1 Pa=1 N/m^2

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 26 60 21, 27 01 31 **Telegrams : Manaksanstha**

Regional Offices :

		Telephone
Western : Novelty Chambers, Grant Road	BOMBAY 400007	89 65 28
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